No. R. 4322—*Agri.* 92-10-*Sl.* 3, *dated* 23*rd January* 1911.

MEMORANDUM.

The following extract from a D. O. letter No. 332, dated the 16th December 1910, from the Government Mycologist and Entomologist (Dr. L. C. Coleman) is published for general information:—

"I have just returned from an extended tour through parts of Chitaldrug and Shimoga Districts. One of the objects was to ascertain as accurately as possible the damage done to jola and other dry land cereals by a grasshopper pest which has appeared within the last three or four years in Davangere, Chitaldrug, Jagalur, Channagiri and Honnali Taluks and to inspect the results of work done in combating it at Honnali this year.

First as to the extent of damage,—there is no doubt that the pest has been becoming progressively worse ever since it appeared and I look upon it as the most serious insect pest in Mysore to-day, not from the extent of damage it has done but from its possibilities for the future. As far as I can at present see, unless energetic steps are taken now, it is likely to spread throughout the jola and ragi growing parts of the State. Its spread will no doubt be slow as the grasshopper has no wings and therefore cannot fly, but it will be none the less sure on that account.

The actual area in Mysore seriously attacked this year must be about 7,000 or 8,000 acres. On this whole area I should say the crop has been reduced to one-half by the pest. Where the attack has been worst—and that is probably over more than a thousand acres the loss has been practically a complete one. I should estimate the total loss this year at about Rs. 50,000.

Now as to what we have been doing,—I have had a man stationed at Honnali for about four months trying to persuade the people to take up certain measures to combat the pest. I spent considerable time there myself in the same connection and, as a result, in one village we were able to demonstrate to the satisfaction of the people that the pest can be controlled. The method used was a simple one, *viz.*, catching the young grasshoppers in large bags of a given pattern which are swept over the young crops. The cost of a bag is about one rupee.

In addition another method was attempted. The grasshopper lays its eggs to a great extent in the fields in masses at a depth of about two inches. The young hoppers hatch in July and work their way to the surface through soil above them, which is for the most part quite loose through cultivation. Experiments carried out by me in the laboratory have shown that the young hoppers are not able to push up through more than about 2½ inches of firm soil. It is clear then that if the eggs could be buried to a depth of six or seven inches, most of the young grasshoppers would never reach the surface at all but would die in the ground. This can be done by deep ploughing by means of an improved plough which we are selling, and work was done in this connection at Honnali this year. Unfortunately on account of indifference and opposition on the part of the raiyats, we could get only about sixteen acres ploughed so that this method could not be given a fair test, as grasshoppers naturally came in in large numbers from the surrounding land.

The accompanying photographs taken by me on this tour will give you an idea of the damage done and the work we have done in combating it.

A.—Shows a plot where nothing was done and where the loss is practically a total one. An examination will show that the stalks have been quite devastated of leaves except for the midribs of the leaves which stand out like so many long needles from the stem. In the heads practically every grain has been eaten out leaving simply an empty head. The crop is not worth harvesting for the grain that is left.

B.—This shows a plot not quite so badly attacked there being a few shreds of leaves left and a small amount of grain in the heads.

C.—This shows a plot which was deep ploughed and bagged only twice. The seed was placed far apart which accounts for the thin appearance of the crop. Some damage has been done and there would undoubtedly have been more had not the man's neighbours on practically all sides bagged much more thoroughly than he did so that they helped to save his crop.

D.—This shows jola in a plot which was ploughed deep and bagged 8 times. Last year this plot (8 acres) was the worst affected in the village, the man getting only one candy of grain worth about Rs. 20. This year his is the best crop in the whole neighbourhood, estimated by him at ten candies and by his neighbours at over twelve candies worth over Rs. 200. He places his whole expenses connected with the bagging at Rs. 6. Other crops where bagging was done less thoroughly were not so completely saved, but in all cases the bagging paid for itself many times over.

I have given you this long explanation of the work done, as I wish to make certain proposals in connection with it. It is clear that to get really good results a whole village should co-operate and this is just what they apparently will not do.

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What I really propose doing is as follows :—

(*a*) *Deep ploughing.*—I want to test this thoroughly on one or two whole villages. The ploughs are fairly expensive costing about Rs. 30. I want to hire ploughs out by the day to the raiyats of these villages charging a fee just sufficient to cover wear, etc. I have estimated it at about two or three annas per day. If the work is successful this year, I have no doubt a number of landholders will go in for ploughs and the following year the operations could be extended to all the affected tracts.

(*b*) *Bagging.*—This should be done in all the affected villages. One fieldman should be appointed temporarily in each affected group of villages to see that the work is thoroughly and systematically done. Coolies would have to be hired to carry out the bagging. The whole of the operations would be under the supervision of two or three permanent members of the staff of this department.

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By Order,
C. S. BALASUNDARAM IYER,
Officiating Secretary to Government, General and Revenue Departments.

A.—See paragraph A in text.

B.—See paragraph B in text.

This field is full of weeds which are not turned under and killed by the country plough.

C.—See paragraph C in text.

The improved plough has turned under and killed most of the weeds, thus reducing very much the work of weeding.

D.—See paragraph D in text.